REMARKS

Claims 1-2, 4, 6-7, 9-11, 16-17, 19-20, and 26-27 are rejected under 35 USC 103(a) as being unpatentable over Auding in view of Hunt et al. (U.S. Patent 6,396,387) and further in view of Sasaki et al. Claim 5 is rejected under 35 USC 103(a) as being unpatentable over Auding in view of Hunt et al. (U.S. Patent 6,396,387) and further in view of Cooper (U.S. Patent 5,616,266). Claims 8 and 28 are rejected under 35 USC 103(a) as being unpatentable over Auding in view of Hunt and Sasaki and further in view of Flory et al. (U.S. Patent 5,132,280). Claims 12-15 and 22-23 are rejected under 35 USC 103(a) as being unpatentable over Auding in view of Hunt, Sasaki and Sano (U.S. Patent 5,130,281). Claims 18 and 25 are rejected under 35 USC 103(a) as being unpatentable over Auding in view of Hunt, Sasaki and Brown (U.S. Patent 4,721,632). Claims 3, 21, and 24 are rejected under 35 USC 103(a) as being unpatentable over Auding in view of Hunt, Sasaki and Dinter (U.S. Patent 6,404,130). Claim 29 is rejected under 35 USC 103(a) as being unpatentable over Auding in view of Hunt, Sasaki and Aslam et al (U.S. Patent 4,912,087).

Independent claim 1 has been amended to recite that the thin film electrical heating element "is stable at at least one of a power density greater than 10 watts cm^{-2} and a temperature greater than 600°C." These features emphasize that the thin film heating element is suitable for high power density heating applications.

With this in mind, Applicants respectfully assert that the combination of references pointed to by the Examiner is improper as the secondary references Hunt et al and Sasaki et al are non-analogous art, and thus the Examiner has failed to establish a proper prima facie obviousness rejection of claim 1. More particularly, in order to rely on a reference as a basis for rejection, the reference must either be in the applicant's field of endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant's invention is concerned. In re Oetiker, 977 F.2d 1443, 1446 (Fed. Cir. 1992). In the present application, the applicant's field of endeavor is a "thin film heating element". In contrast, the secondary references Hunt et al and Sasaki et al describe a **thin film resistor for printed circuit boards** and a multilayer **thermistor**, respectively. A thermistor is an electrical resistor whose resistance varies with temperature, and it is used to measure temperature. A thin film heating element is in a different field with respect o a **thin film resistor for printed circuit boards** or a multilayer **thermistor**. These devices perform completely different functions and have widely divergent design criteria. Moreover, the secondary references are not pertinent to the particular problem with which the present invention is involved (i.e., improving the stability of a thin film heating element by doping a metal oxide with at least one rare earth element such that the thin film heating element is suitable for high power density and temperature applications). No inference can be made or supported that a person of ordinary skill in the art would contemplate combining the second references Hunt et at and Sasaki et al with the primary reference Auding to form a thin film heating element suitable for high power density and temperature applications. Thus, the combination of references pointed to by the

Examiner is improper as the second references are non-analogous art, and the Examiner has failed to establish a proper prima facie obviousness rejection of claim 1.

Sasaki et al is concerned with improving the ohmic contacts to a layered structure of a thermistor. The layered structure includes semiconductor substrates that are each doped with a slight amount of rare earth element such as lanthanum, cerium, etc. Such doping provides a positive resistance-coefficient for the thermistor (col. 4, lines 1-12). The resistance-temperature coefficient of a thermistor is the rate of change of resistance per unit temperature change. Thus, Sasaki is deficient in two aspects. First, the rare earth element doping is added to a semiconductor substrate and not to a metal oxide as recited in claim 1. Secondly, Sasaki is concerned with a totally different field and problem. It has nothing to do with a thin film heating element and improving the stability of a thin film heating element by doping a metal oxide doped with at least one rare earth element such that the thin film heating element is suitable for high power density and temperature applications. For these reasons, Applicants respectfully assert that Sasaki et al fails to provide a proper basis for an obviousness rejection of claim 1.

Similarly, Hunt et al describes a resistive element for printed circuit boards in which the primary design criterion would be to reduce or minimize heat generation. In Hunt, oxides of rare earth metals are codeposited with a conductive metal by CCVD or CACCVD to form a thin film resistor (col. 24, lines 6-40). The rare earth metal oxide dopant is added to increase the resistivity of the resulting thin film resistor. Thus, Hunt et al. is concerned with a totally different field and problem. It has nothing to do with a thin

film heating element and improving the stability of a thin film heating element by doping a metal oxide with at least one rare earth element such that the thin film heating element is suitable for high power density and temperature applications. For these reasons, Applicants respectfully assert that Hunt et al fails to provide a proper basis for an obviousness rejection of claim 1.

Because Hunt et al and Sasaki et al are non-analogous art, the combination of the Auding et al, Hunt et al and Sasaki et al pointed to by the Examiner is improper, and the Examiner has failed to establish a prima facie obviousness rejection of claim 1. Moreover, applicants respectfully submit that such a combination is contrived and more a result of improper hindsight analysis by the Examiner of the result claimed. Panduit Corp. v. Dennison Mfg. Co., 227 U.S.P.Q. 337, 343 (Fed. Cir. 1985) (citing In re Shuman, 361 F.2d 1008, 1012, 150 U.S.P.Q. 54, 57 (C.C.P.A. 1966).

Applicants respectfully submit that dependent claims 2-18 are patentable over the cited prior art for those reasons advanced above with respect to claim 1 from which they respectfully depend, and for reciting additional features that are neither taught not suggested by the cited prior art references. For example, claim 15 is directed to equal concentrations of approximately 2.5 mol % of cerium and lanthanum in the organometallic base solution from which the electrically conductive layer is formed. Nowhere does the cited prior art references teach or suggest these features.

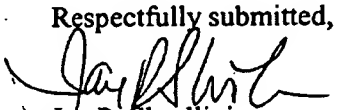
With respect to independent claim 19, it is directed to a method of forming the thin film heating element wherein an electrically conductive layer is deposited onto an electrically insulating substrate by "pyrolysis of an organometallic base solution containing at least one rare earth element." Nowhere do the cited prior art references teach or suggest these features. The Examiner points to Auding et al as teaching this feature. However, the pyrolysis of Auding et al. has nothing to do with "an organometallic base solution containing at least one rare earth element." Because of the significant differences between the features of claim 19 and the cited prior art, Applicants respectfully assert that claim 19 is patentable over the cited prior art. The Examiner has failed to address this issue in the Final Office Action and thus the finality of the Office Action is improper. Should the Examiner maintain such grounds for rejection, Applicants respectfully request that the Examiner point to specific columns and line numbers of the cited references that teach or suggest these features.

In addition, claim 19 has been amended to recite that the "thin film electrical heating element is stable at at least one of a power density greater than 10 watts cm^{-2} and a temperature greater than 600°C" in order to emphasis that the thin film heating element is suitable for high power density heating applications. These changes further distinguish the claim from the non-analogous references Hunt et al and Sasaki et al that are pointed to by the Examiner. As set forth above, the combination of references pointed to by the Examiner is improper as the secondary references are non-analogous art, and thus the Examiner has failed to establish a prima facie obviousness rejection of claim 19.

Applicants respectfully submit that dependent claims 20-29 are patentable over the cited prior art for those reasons advanced above with respect to claim 19 from which they respectfully depend, and for reciting additional features that are neither taught not suggested by the cited prior art references. For example, claim 25 is directed to pyrolysis of an organometallic base solution comprising monobutyl tin trichloride. Nowhere do the cited prior art references teach or suggest this feature. Hereto, the Examiner has failed to address this issue in the Final Office Action. Should the Examiner maintain such grounds for rejection, Applicants respectfully request that the Examiner point to specific columns and line numbers of the cited references that teach or suggest these features.

In light of all of the above, it is submitted that the claims are in order for allowance, and prompt allowance is earnestly requested. Should any issues remain outstanding, the Examiner is invited to call the undersigned attorney of record so that the case may proceed expeditiously to allowance.

Respectfully submitted,



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